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EXAMINER	
JACKSON, JAKIEDA R	

ART UNIT	PAPER NUMBER
2655	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/745,795	IIZUKA, YASUKI	
	Examiner	Art Unit	
	Jakieda R. Jackson	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *November 14, 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-19 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *21* is/are allowed.

6)☒ Claim(s) *1-8 and 10-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the Office Action mailed June 13, 2005, applicant submitted an amendment filed on November 14, 2005, in which the applicant amended and requested reconsideration with respect to **claims 1-3, 4-5, 7-8 and 10-17**.

Response to Arguments

2. Applicant amended to clarify that the character joint probabilities are calculated substantially automatically without human tagging. Applicant argues that the benefit of the present invention is the avoidance of tagged corpora (as in Halstead). Applicant further argues that tagged corpora are known in the art as a collection of text materials that have been extensively tagged by a human intervention to indicate certain types of context boundaries including word boundaries. However, there is nowhere in Halstead that teaches that tagged corpora inherently includes a manual input. In fact, Halstead (column 14, lines 1-10) teaches that the word breaking facility may be used in applications other than those described above, such as natural language processing applications that seek to provide syntactic analysis of sentences (document). Natural Language Processing is a field devoted to allowing machines the ability to understand human language. A Natural Language parser could be used to create tagged corpora, not necessarily a human. Therefore, applicant's arguments are not persuasive, but to further clarify the "substantially automatically without human tagging from documents to be processed", Kempe '830 will be used to give a thorough explanation.

Applicant further argues that Abe relies on known words, while the applicant's invention as claimed determines division points between words based on joint character probabilities from entered but not-yet-divided document in a database. However, Abe teaches an automated learning mechanism for a dictionary which enables the dictionary to accommodate new words and their definitions (column 9, lines 15-19). Therefore, applicant's arguments are not persuasive.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-2, 4-5 and 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Halstead, Jr. et al. (U.S. Patent No. 5,963,893), hereinafter referenced as Halstead in view of Kempe (USPN 6,816,830).

Regarding **claim 1**, Halstead discloses a character string dividing system for segmenting a character string (breaking a text string) into a plurality of words (into separate words; column 3, lines 52-54), comprising:

input means (figure 1, element 14) for receiving documents to be processed (text string; column 4, lines 25-47 with column 14, lines 1-10);

document data storing means (tagged corpora) serving as a document database for storing the received documents (column 8, lines 49-65);

character joint probability calculating means (probabilities derived by analyzing) for calculating a character joint probability that represents a probability of two neighboring characters appearing immediately next to each other in said document database (column 8, lines 49-65);

probability table storing means (tagged corpora) for storing a table of calculated character joint probabilities (column 8, lines 49-65);

character string dividing means for segmenting an objective character string (breaking a text string) into a plurality of words (into separate words; column 3, lines 52-54) with reference to said table of calculated character joint probabilities (column 8, lines 49-65); and

output means (figure 1,element 16) for outputting a division result of said objective character string (column 13, lines 3-21), but does not specifically teach substantially automatically tagging from documents to be processed with human.

Kempe teaches that machine-readable text by automatically obtaining tags for words in a sentence or other text segment or corpus is well known (column 1, lines 19-21). Kempe further teaches executing the instructions by instruction data processor can automatically obtain a string of tag combination (column 7, lines 27-37 and column 20, lines 14-22), which takes less time and money and thus makes it less difficult to develop a system in a short period.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's system such that it does not require human intervention, as taught by Kempe, to prevent the manually constraints and alleviate the tension between speed and accuracy (column 2, lines 39-45).

Regarding **claim 2**, Halstead discloses a character string dividing method for segmenting a character string (breaking a text string) into a plurality of words (into separate words; column 3, lines 52-54), said method comprising the steps of:

calculating a character joint probability that represents a probability of two neighboring characters appearing immediately next to each other in a given document database (column 8, lines 49-65); and

segmenting an objective character string (breaking a text string) into a plurality of words (into separate words; column 3, lines 52-54) with reference to calculated character joint probabilities (adjacent characters to the bigram phrase break probabilities; column 6, lines 19-22) so that each division point (|) of said objective character string (figure 6) is present between two neighboring characters having a smaller character joint probability (figure 8, element 66 with column 8, lines 49-65), but does not specifically teach substantially automatically tagging from documents to be processed with human.

Kempe teaches that machine-readable text by automatically obtaining tags for words in a sentence or other text segment or corpus is well known (column 1, lines 19-21). Kempe further teaches executing the instructions by instruction data processor can automatically obtain a string of tag combination (column 7, lines 27-37 and column

20, lines 14-22), which takes less time and money and thus makes it less difficult to develop a system in a short period.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's method such that it does not require human intervention, as taught by Kempe, to prevent the manually constraints and alleviate the tension between speed and accuracy (column 2, lines 39-45).

Regarding **claim 4**, Halstead discloses the method comprising the steps of:

statistically calculating a character joint probability that represents a probability of two neighboring characters appearing immediately in a given document database (probabilities are derived by analyzing tagged corpora), said character joint probability being calculated as an appearance probability (represented as /as a1 a2 a3/b1 b2 b3/) of a first character string appearing immediately before a second character string (Begin an a1), said first character string including a former one of said two neighboring characters as a tail thereof (a3 and End) and said second character string including a latter one of said two neighboring characters as a head thereof (column 8, lines 49-65); and

segmenting an objective character string into a plurality of words (breaking a text string; column 8, lines 49-65) with reference to calculated character joint probabilities (column 8, lines 49-65) so that each division point (column 3, lines 52-54) of said objective character string is present between two neighboring characters having a smaller character joint probability (column 8, lines 49-65), but does not specifically teach substantially automatically tagging from documents to be processed with human.

Kempe teaches that machine-readable text by automatically obtaining tags for words in a sentence or other text segment or corpus is well known (column 1, lines 19-21). Kempe further teaches executing the instructions by instruction data processor can automatically obtain a string of tag combination (column 7, lines 27-37 and column 20, lines 14-22), which takes less time and money and thus makes it less difficult to develop a system in a short period.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's method such that it does not require human intervention, as taught by Kempe, to prevent the manually constraints and alleviate the tension between speed and accuracy (column 2, lines 39-45).

Regarding **claim 5**, Halstead discloses the method wherein said character joint probability of two neighboring characters is calculated based on a first probability of said first character string (Begin and a1; a1 and a2; a2 and a3; a3 and END) appearing immediately before said latter one of said two neighboring characters and also based on a second probability (Begin and b1; b1 and b2; b2 and b3; b3 and END) of said second character string appearing immediately after said former one of said two neighboring characters (column 8, lines 49-65).

Regarding **claim 7**, Halstead discloses the method wherein said division point (|) of said objective character string (figure 6) is determined based on a comparison between the character joint probability (adjacent characters to the bigram phrase break probabilities; column 6, lines 19-22 with column 8, lines 49-65) and a threshold (column

9, lines 6-11 and lines 59-65), and said threshold is determined with reference to an average word length of resultant words (column 1, lines 21-25).

Regarding **claim 8**, Halstead discloses the method, wherein a changing point of character type (h, K, H and P) a prospective division point (periods are used to specify the breaks) of said objective character string (column 10, lines 39-49).

5. **Claims 3 and 10-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Halstead, Jr. et al. (U.S. Patent No. 5,963,893), hereinafter referenced as Halstead in view of Abe et al. (U.S. Patent No. 6,173,253), hereinafter referenced as Abe and in further view of Kempe (USPN 6,816,830)

Regarding **claim 3**, Halstead discloses a character string segmenting (breaking a text string) into a plurality of words (into separate words; column 3, lines 52-54), said method comprising the steps of:

calculating a character joint probability that represents a probability of two neighboring characters (statistical probabilities for breaking bigrams; column 4, lines 25-32) appearing immediately next to each other in a given document database (column 5, lines 16-25); and

segmenting an objective character string (breaking a text string) into a plurality of words (into separate words; column 3, lines 52-54) with reference to calculated joint probabilities (adjacent characters to the bigram phrase break probabilities; column 6, lines 19-22) so that each division point (|) of said objective character string (figure 6) is

present between two neighboring characters having a smaller joint probability (figure 8, element 66), but lacks wherein said character joint probability being calculated as an appearance probability of a specific character string.

Abe discloses the method wherein said character joint probability being calculated as an appearance probability of a specific character string appearing immediately before a specific character (specified characters), said specific character string including a former one (before) of said two neighboring characters as a tail thereof and said specific character being a latter one (after) of said two neighboring characters (column 6, line 35 – column 7, line 10), for the easiness of accessibility.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's invention such that said character joint probability being calculated as an appearance probability of a specific character string, to allow an easy way to access character code in the dictionary (column 6, lines 43-45).

Halstead in view of Abe discloses a character string dividing method, but does not specifically teach substantially automatically tagging from documents to be processed with human.

Kempe teaches that machine-readable text by automatically obtaining tags for words in a sentence or other text segment or corpus is well known (column 1, lines 19-21). Kempe further teaches executing the instructions by instruction data processor can automatically obtain a string of tag combination (column 7, lines 27-37 and column

20, lines 14-22), which takes less time and money and thus makes it less difficult to develop a system in a short period.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead in view of Abe's method such that it does not require human intervention, as taught by Kempe, to prevent the manually constraints and alleviate the tension between speed and accuracy (column 2, lines 39-45).

Regarding **claim 10**, Halstead discloses system comprising:

input means (figure 1, element 14) for receiving a document (text string; column 4, lines 25-47);

document data storing means (tag, lines ed corpora) serving as a document database for storing a received document (column 8, lines 49-65);

character joint probability calculating means (probabilities derived by analyzing) for calculating a character joint probability that represents a probability of two neighboring characters appearing immediately next to each other in said document database (column 8, lines 49-65);

probability table storing means (tagged corpora) for storing a table of calculated character joint probabilities (column 8, lines 49-65), but lacks a word dictionary, division pattern producing means, correct pattern selecting means and output means.

Abe discloses a character string dividing system, comprising;

word dictionary storing means (word dictionary) for storing a word dictionary prepared or produced beforehand (preparing a dictionary; column 1, lines 65-67);

division pattern producing means (candidate extraction process) for producing a plurality of candidates (extracting candidates) for a division pattern of an objective character string (sentence) with reference to information of said word dictionary (vocabulary dictionary; figure 2, element 131; column 4, lines 44-53 with figure 10; column 8, lines 42-46);

correct pattern selecting means for selecting a correct division pattern (select an optimal result) from said plurality of candidates (characters, words or sentences; column 9, lines 1-12) with reference to said table of character joint probabilities (column 8, lines 30-37); and

output means (figure 23, element 2305) for outputting said selected correct division pattern as a division result of said objective character string (column 3, lines 35-42 with figure 7, element 704), for extracting word-to-word relation information automatically and preparing a dictionary.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's system wherein it comprises a word dictionary, division pattern producing means, correct pattern selecting means and output means, for extracting word-to-word relation information automatically and preparing a dictionary (column 1, lines 65-67) and for allowing a user to input long words in a sentence in terms of elliptic characters without disturbing the continuity thought (column 1, lines 7-9).

Halstead in view of Abe discloses a character string dividing method, but does not specifically teach substantially automatically tagging from documents to be processed with human.

Kempe teaches that machine-readable text by automatically obtaining tags for words in a sentence or other text segment or corpus is well known (column 1, lines 19-21). Kempe further teaches executing the instructions by instruction data processor can automatically obtain a string of tag combination (column 7, lines 27-37 and column 20, lines 14-22), which takes less time and money and thus makes it less difficult to develop a system in a short period.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead in view of Abe's system such that it does not require human intervention, as taught by Kempe, to prevent the manually constraints and alleviate the tension between speed and accuracy (column 2, lines 39-45).

Regarding **claims 11 and 17**, Halstead discloses a method comprising the steps of:

calculating a character joint probability that represents a probability of two neighboring characters (statistical probabilities for breaking bigrams; column 4, lines 25-32) appearing immediately next to each other in a given document database (column 5, lines 16-25);

storing character calculated joint probabilities (storage for n-grams; column 1, lines 55-66);

segmenting an objective character string (breaking a text string) into a plurality of words (into separate words) with reference to a word dictionary (column 3, lines 52-60); and

that each division point (|) of said objective character string (figure 6) is present between two neighboring characters having a smaller joint probability (figure 8, element 66), but lacks wherein, when there are a plurality of candidates for a division pattern of said objective character string, a correct division pattern is selected from said plurality of candidates with reference to character calculated joint probabilities so that each division point of said objective character string is present between two neighboring characters having a smaller character joint probability.

Abe discloses the method wherein, there are a plurality of candidates for a division pattern (extracting candidates) of said objective character string (sentence; column 4, lines 44-53 with figure 10; column 8, lines 42-46), a correct division pattern is selected (select an optimal result) from said plurality of candidates (characters, words or sentences; column 9, lines 1-12) with reference to calculated character joint probabilities (column 8, lines 30-37), to input character strings without having to specify the candidate words and/or characters.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's invention such that a correct division pattern is selected from said plurality of candidates with reference to calculated character joint probabilities so that each division point of said objective character string is present between two neighboring characters having a smaller joint probability, to

allow the input of long word in a sentences without disturbing continuity of thought and the increase in operability (column 1, lines 7-15).

Halstead in view of Abe discloses a character string dividing method, but does not specifically teach substantially automatically tagging from documents to be processed with human.

Kempe teaches that machine-readable text by automatically obtaining tags for words in a sentence or other text segment or corpus is well known (column 1, lines 19-21). Kempe further teaches executing the instructions by instruction data processor can automatically obtain a string of tag combination (column 7, lines 27-37 and column 20, lines 14-22), which takes less time and money and thus makes it less difficult to develop a system in a short period.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead in view of Abe's method such that it does not require human intervention, as taught by Kempe, to prevent the manually constraints and alleviate the tension between speed and accuracy (column 2, lines 39-45).

Regarding **claim 12**, Halstead discloses the method wherein

a score of each candidate is calculated (scores are calculated; column 9, lines 6-11) when there are a plurality of candidates for a division pattern of said objective character string (breaking a text string; column 3, lines 52-54),

said score is a sum of character joint probabilities at respective division points (statistic probability for breaking; column 4, lines 25-47) of said objective character

string (text string; column 3, lines 52-54) in accordance with a division pattern of said each candidate (figure 6), and

a candidate having the smallest score is selected as said correct division pattern (figure 8, element 66).

Regarding **claim 13**, Halstead discloses the method wherein

a score of each candidate is calculated (scores are calculated; column 9, lines 6-11) when there are a plurality of candidates for a division pattern of said objective character string (breaking a text string; column 3, lines 52-54), and

a candidate having the smallest score is selected as said correct division pattern (figure 8, element 66), but lacks wherein said score is a product of character joint probabilities at respective division points.

Abe discloses the method wherein said score is a product (column 8, lines 46-54) of character joint probabilities (transition probability) at respective division points of said objective character string (sentence) in accordance with a division pattern of said each candidate (column 8, lines 37-60), to determine the optimal word in considering the context of a sentence.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's invention such that said score is a product of character joint probabilities at respective division points, to allow the input of long words in a sentence without disturbing continuity of thought and the increase in operability (column 1, lines 7-15).

Regarding **claim 14**, Halstead discloses the method wherein

a calculated character joint probability is given to each division point of said candidate (column 5, lines 41-55);

a constant value is assigned to each point between two characters not divided (each pair of adjacent characters; column 6, lines 19-24 and column 10, lines 1-9);

a score of each candidate (score assigned to each entry; column 10, lines 1-9) is calculated based on a sum of said character joint probability (highest scoring path kept; column 9, lines 6-11) and said constant value thus assigned (column 10, lines 1-9); and

a candidate having the smallest score is selected as said correct division pattern (figure 8, element 66).

Regarding **claim 15**, Halstead discloses the method wherein

a calculated character joint probability is given to each division point of said candidate (column 5, lines 41-55);

a constant value is assigned to each point between two characters not divided (each pair of adjacent characters; column 6, lines 19-24 and column 10, lines 1-9); and

a candidate having the smallest score is selected as said correct division pattern (figure 8, element 66), but lacks a score of each candidate is calculated based on a product of said joint probability.

Abe discloses the method wherein a score of each candidate is calculated based on a product (column 8, lines 46-54) of said character joint probability (transition probability; column 8, lines 37-60; figures 2, 5-8, 10, 13 and column 6, line 63 – column

7, line 7, column 8, lines 41-59 with column 9, lines 1-12), to determine the optimal word in considering the context of a sentence.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's invention such that a score of each candidate is calculated based on a product of said figures 2, 5-8, 10, 13 and column 6, line 63 – column 7, line 7, column 8, lines 41-59 with column 9, lines 1-12joint probability, to allow the input of long words in a sentence without disturbing continuity of thought and the increase in operability (column 1, lines 7-15).

Regarding **claim 16**, it is interpreted and rejected for the same reasons as set forth in the combination of claims 1 and 10.

6. **Claim 6** is rejected under 35 U.S.C. 103(a) as being anticipated by Halstead in view of Yamamoto et al. (U.S. Patent No. 6,098,035), hereinafter referenced as Yamamoto and in further view of Kempe.

Regarding **claim 6**, Halstead discloses the method comprising the steps of:

calculating a character joint probability that represents a probability of two neighboring characters appearing immediately next to each other in a given document database (column 8, lines 49-65) prepared for learning purpose (column 12, lines 1-3 with lines 20-29); and

segmenting an objective character string (breaking a text string) into a plurality of words (into separate words; column 3, lines 52-54) with reference to calculated

character joint probabilities (adjacent characters to the bigram phrase break probabilities; column 6, lines 19-22) so that each division point (|) of said objective character string (figure 6) is present between two neighboring characters having a smaller joint probability (figure 8, element 66 with column 8, lines 49-65), but lacks wherein, when said objective character string involves a sequence of characters not involved in said document database, a character joint probability of any two neighboring characters not appearing in said database is estimated based on said calculated character joint probabilities for the neighboring characters stored in said document database.

Yamamoto discloses a method for segmenting a character string into a plurality of words wherein, when said objective character string involves a sequence of characters not involved in said document database (unknown word not present in dictionary; column 2, lines 63-66), a character joint probability of any two neighboring characters (character sequence) not appearing in said database (dictionary not used) is estimated based on said calculated character joint probabilities (chain probability) for the neighboring characters stored in said document database (column 2, line 63 – column 3, line 28), to find an optimum result by a probabilistic model.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead's method wherein, when said objective character string involves a sequence of characters not involved in said document database, a character joint probability of any two neighboring characters not appearing in said database is estimated based on said calculated character joint

probabilities for the neighboring characters stored in said document database, to conduct analysis with greater accuracy (column 5, lines 31-35).

Halstead in view of Yamamoto discloses a character string dividing method, but does not specifically teach substantially automatically tagging from documents to be processed with human.

Kempe teaches that machine-readable text by automatically obtaining tags for words in a sentence or other text segment or corpus is well known (column 1, lines 19-21). Kempe further teaches executing the instructions by instruction data processor can automatically obtain a string of tag combination (column 7, lines 27-37 and column 20, lines 14-22), which takes less time and money and thus makes it less difficult to develop a system in a short period.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Halstead in view of Yamamoto's method such that it does not require human intervention, as taught by Kempe, to prevent the manually constraints and alleviate the tension between speed and accuracy (column 2, lines 39-45).

7. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Halstead in view of Abe and Kempe, as applied to claim 17 above, and in further view of Yamamoto.

Regarding **claim 18**, Halstead in view of Abe and Kempe discloses the character string dividing method, but lacks wherein it is checked if any word starts from a certain character position when a preceding word ends at a character position and, when no dictionary word starting from said character position is present, appropriate character strings are added as unknown words starting from said character position.

Yamamoto discloses the method wherein it is checked if any word starts from a certain character position (i) when a preceding word ends at a character position (wi; column 2, lines 25-26) and, when no dictionary word starting from said character position (i) is present (character sequence not present in dictionary; column 2, lines 63-66), appropriate character strings are added as unknown words starting from said character position (i) (column 2, lines 15-31), where said character strings to be added have a character length (character length; column 2, lines 23-31) not smaller than n (n) and not larger than m (i), where n and m are positive integers (column 8, lines 13-24 and column 2, lines 15-31), to analyze language text without using a dictionary, using a probabilistic technique.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Halstead, Abe and Kempe invention such that appropriate character strings are added as unknown words starting from said character position, to be able to pick out words or phrases in text of different languages with high accuracy and high speed (column 1, lines 14-39).

8. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Halstead in view of Abe and Kempe, as applied to claim 17 above, and in further view of Hon et al. (U.S. Patent No. 5,852,801), hereinafter referenced as Hon.

Regarding **claim 19**, Halstead in view of Abe and Kempe discloses the character string method wherein

a score is a sum of calculated joint probabilities at respective division points (Halstead, statistic probability for breaking; column 4, lines 25-47 with column 8, lines 49-65); and

a candidate having the smallest score is selected as said correct division pattern (figure 8, element 66), but lacks wherein a constant value given to said unknown word is larger than a constant value given to said dictionary word and a score of each candidate is calculated based on a sum of said constant values given to said unknown word and said dictionary word.

Hon discloses the method wherein

a constant value given to said unknown word is larger (unrecognized word with value of 1) than a constant value given to said dictionary word (smaller than 1; column 9, lines 20-27); and

a score of each candidate is calculated based on a sum of said constant values given to said unknown word (new) and said dictionary word (predetermined attributes; column 9, lines 36-40), to increase the probability of recognizing that word in the future.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Halstead, Abe and Kempe invention such that unknown word is given a value larger than the dictionary word and that the score is calculated based on the unknown word and the dictionary word, to improve the probability of recognizing new words in the future (column 2, lines 18-35).

Allowable Subject Matter

9. **Claim 21** is allowed.

The following is a statement of reasons allowance:

As for independent claim 21, it recites a character string dividing method for segmenting a character string into a plurality of words wherein a constant value given to said unknown word is larger than a constant value given to said dictionary word and a score of each candidate is calculated based on a product of said constant values given to said unknown word and said dictionary word. Prior art such as Halstead and Abe show similar methods and systems but fails to teach the recited method and system wherein these scores are calculated based on a *product* of unknown words and dictionary words.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R. Jackson whose telephone number is 571.272.7619. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571.272.7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ
January 26, 2006

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER